

Application No. 10/752,403
Amendment dated March 16, 2005
Reply to Office Action of December 16, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (Previously Presented) A pneumatic vehicle tire comprising a multi-ply carcass, which extends between two bead cores having associated bead apexes, an arrangement of belt plies provided between the carcass plies and a tread strip and also rubber reinforcing plies arranged in the side wall regions, which take on a supporting function with a deflated tire, wherein a first rubber reinforcing ply is arranged radially inside a first carcass ply, a second rubber reinforcing ply is arranged between the first carcass ply and a second carcass ply, a third rubber reinforcing ply is arranged between the second carcass ply and a third carcass ply, and the three rubber plies have a different height in the radial direction and different thicknesses over the height of the side wall; and wherein the radially inner end regions of the first rubber reinforcing ply and the second rubber reinforcing ply are disposed on the axially inner side of the bead apex, and the ends of the radially innermost, first, carcass ply are led around the respective bead core and are overlappingly connected to the respective end of the outer, third, carcass ply, and the middle carcass ply terminates axially inside the bead apex adjacent to the respective bead core, the tire characterized in that the three rubber reinforcing plies extend, starting from the bead apex region with mutually displaced ends up to and beneath the edge region of the belt arrangement; and the tire further characterized in that all rubber reinforcing plies and also the bead apex consist of the same rubber mixture whose complex modulus of elasticity (E^*) of the rubber reinforcing plies and also of the bead apex is the same as or greater than 9 MPa and the $\tan \delta$ is the same as or smaller than 0.03, measured at 70°C, 10 Hz, 10% prestress and 1% double strain amplitude (DSA).

2. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that all three rubber reinforcing plies have a different thickness over their height and the middle rubber reinforcing ply has a lesser thickness over an at least predominate part of the side wall height in comparison to the inner and outer rubber reinforcing plies.

3. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the tread side ends of the rubber reinforcing plies terminate with an increasing distance from the central plane of the tire, starting from the radially innermost ply.

4. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the radially inner end of the radially outer rubber reinforcing ply contacts the inner side of the bead apex.

5. (Currently Amended) A pneumatic vehicle tire comprising a multi-ply carcass, which extends between two bead cores having associated bead apexes, an arrangement of belt plies provided between the carcass plies and a tread strip and also rubber reinforcing plies arranged in the side wall regions, which take on a supporting function with a deflated tire, wherein a first rubber reinforcing ply is arranged radially inside a first carcass ply, a second rubber reinforcing ply is arranged between the first carcass ply and a second carcass ply, a third rubber reinforcing ply is arranged between the second carcass ply and a third carcass ply, and the three rubber plies have a different height in the radial direction and different thicknesses over the height of the side wall; and wherein the radially inner end regions of the first rubber reinforcing ply and the second rubber reinforcing ply are disposed on the axially inner side of the bead apex, and the ends of the radially innermost, first, carcass ply are led around the respective bead core and are overlappingly connected to the respective end of the outer, third, carcass ply, and the middle carcass ply terminates axially inside the bead apex adjacent to the respective bead core, the tire characterized in that the three rubber

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reinforcing plies extend, starting from the bead apex region with mutually displaced ends up to and beneath the edge region of the belt arrangement; and the tire further characterized in that all rubber reinforcing plies and also the bead apex consist of the same rubber mixture whose complex modulus of elasticity (E^*) of the rubber reinforcing plies and also of the bead apex is the same as or greater than 9 MPa and the $\tan \delta$ is the same as or smaller than 0.03, measured at 70°C, 10 Hz, 10% prestress and 1% double strain amplitude (DSA), and the A
~~pneumatic vehicle tire in accordance with claim 1, characterized in that radially inner end of the outer rubber reinforcing ply is simultaneously formed as the bead apex.~~

6. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that all rubber reinforcing plies are made so that they taper to a tip at their free ends in the cross-section.

7. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the middle carcass ply is connected in a region lying above the bead core to the radially inner carcass ply.

8. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the carcass plies consist of rayon.

9. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the belt plies consist of aromatic polyamide or steel.

10. (Previously Presented) A pneumatic vehicle tire in accordance with claim 9, characterized in that the belt is stiffened by additional rubber between the belt plies.

11. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the hardness IRHD of the rubber reinforcing plies and also of the bead apex are the same as or greater than 80 when measured at room temperature, with small samples taken from the tire being measured.

12. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that at least the rubber reinforcing plies consist of a rubber mixture which is composed of a polymer mix of natural rubber (NR)/isoprene rubber (IR) and butadiene rubber (BR) with at least 50 parts NR/IR, a carbon black content of 50 to 60 parts, 5 to 8 parts zinc oxide, 2 parts stearic acid, 1.5 parts aging protection agent, and also at least 1 part of vulcanization accelerator and sulfur, all parts being parts by weight.

13. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the rubber reinforcing plies having a continuously changing thickness, have in total their greatest thickness in the region between the half side wall height and the upper third of the side wall height.

14. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that, when measured at approximately two thirds of the side wall height and at the half side wall height, the thickness of the inner rubber reinforcing ply amounts to 3.0 mm and 3.2 mm respectively, the thickness of the middle rubber reinforcing ply amounts to 2.8 and 2.9 mm respectively, and the thickness of the outer rubber reinforcing ply amounts to 2.9 and 3.3 mm respectively, with a tolerance of ± 0.5 mm applying to all measured values.

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15. (Previously Presented) A pneumatic vehicle tire in accordance with claim 5, characterized in that, when measured in the region of maximum bead thickness (side wall height W), the thickness of the inner rubber reinforcing ply amounts to approximately 2.5 mm, the thickness of the central rubber reinforcing ply amounts to approximately 1.9 mm and the thickness of the outer rubber reinforcing ply amounts to approximately 6.9 mm, with a tolerance of ± 0.5 mm applying to all measured values.

16. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that, when related to the axially outer edge of the belt arrangement, the belt side end of the inner rubber reinforcing ply is spaced by 33 mm, the belt side end of the middle rubber reinforcing ply is spaced by 22 mm and the belt side end of the outer rubber reinforcing ply is spaced by 15 mm, with a tolerance of ± 2.5 mm applying to these measured values.

17. (Previously Presented) A pneumatic vehicle tire in accordance with claim 1, characterized in that the crown thickness (A2) measured at the center of the tire is 17.5 ± 0.8 mm and the tire thickness (C2) measured in the transition region of the shoulder and in the region of the ends of the rubber reinforcing plies amounts to 18.5 ± 1.0 mm.

18. (Cancelled)